

WHAT IS CLAIMED

1. A screw compressor, comprising:
a housing; and
a screw rotor disposed in said housing and rotatable relative to said housing for compressing a refrigerant, said housing and said screw rotor having a rest condition, and an operating condition wherein at least one of said housing and said rotor deflect from said rest condition, and means for at least one of reducing deflection from said rest condition and evenly distributing deflection from said rest condition when said rotor is in said operating condition, whereby clearance between said housing and said rotor is optimized in said operating condition.
2. The compressor of claim 1, wherein said means is selected from the group consisting of pressure influencing structures, temperature influencing structures and combinations thereof.
3. The compressor of claim 1, wherein said rotor has a suction end and a discharge end, and a profile geometry selected to provide a non-linear pressure loading from said suction end to said discharge end whereby a resultant load on said rotor is reduced.
4. The compressor of claim 3, wherein said rotor has a pitch which decreases in magnitude from said suction end to said discharge end.
5. The compressor of claim 4, wherein said resultant load is applied along said rotor at a point closer to said discharge end than said suction end.

6. The compressor of claim 1, wherein said rotor has a hollow section positioned along said rotor to substantially uniformly distribute deflection of said rotor in said operating condition over a length of said rotor.

7. The compressor of claim 6, wherein said rotor has a suction end and a discharge end, and wherein said hollow section is disposed at said suction end, whereby deflection of said rotor is beneficially distributed between said suction end and said discharge end.

8. The compressor of claim 1, further comprising an additional thermal mass positioned on at least one of said housing and said rotor so as to absorb heat generated by said compressor in said operating condition and reduce thermal distortion caused by said heat.

9. The compressor of claim 8, wherein said additional thermal mass comprises a section of additional wall thickness on said housing.

10. The compressor of claim 1, wherein said operating condition is an expected operating envelope for said compressor, and wherein said clearance is at least one of smaller and more evenly distribute in said operating condition than in said rest condition.